Appendix A

Economic Summary for California & Oregon Salmon Fishery
Projections for Year 2006
National Marine Fisheries Service, Southwest Region

1.0 Economic Summary – 2006 Projections

Year 2006 has a restrictive season structure compared to recent years due to biological and other factors. The following is a synopsis of economic projections for year 2006.[1] An emphasis will be placed on the geographic management areas from Cape Falcon to Point Sur, where the seasons are most restrictive.

The following table shows projected catch for the non-Indian commercial troll salmon fishery in 2006. There are two projections shown for the commercial troll fishery, one is from the Preseason Report III, produced by the Pacific Fishery Management Council (Council). These projections do not take into consideration the landing and possession limits of 75 Chinook (or less) per vessel per week that are being implemented in some areas. In an attempt to account for the effects of these limits, the Southwest Region (SWR) has developed a 2006 catch projection, which scales down the Pre-III catch projections, by catch reduction levels assumed under these vessel limits. A detailed explanation of the SWR catch projection method and assumptions is provided in Section 2.0 of this document. Hereafter, we label the Pre-III and SWR methods and forecasts by "A" and "B," respectively.

The projected Chinook catch for 2006 is 219,800, using method A, and 167,100, using method B. Both of these estimates are substantially lower than the 625,500 fish caught in 2005.

Catch for Non-Indian Commercial Troll

	Chinook			*Coho*	
Management Area	2006 (A)	2006 (B)	2005	2006	2005
North of Cape Falcon	34,000	34,000	46,600	6,800	4,100
Cape Falcon to Humbug Mt.	45,100	28,800	238,400	0	0
Humbug Mt. to Horse Mt.	0	0	7,200	0	0
South of Horse Mt.	140,700	104,300	333,300	0	0
Total	219,800	167,100	625,500	6,800	4,100

The following table shows projected catch for the recreational ocean fishery for Chinook and Coho salmon. It is projected that the west coast will catch 139,700 Chinook and 93,200 Coho, totaling 232,900 fish. In 2005, 201,800 Chinook and 65,300 Coho were caught, for a total of 267,100 fish. This is 34,200 more fish than 2006's projected catch.

Catch for Recreational Ocean Fishing

	Chinook		*Coho*	
Management Area	2006	2005	2006	2005
North of Cape Falcon	31,000	40,000	73,200	61,700
Cape Falcon to Humbug Mt.	14,200	18,600	20,000	3,600
Humbug Mt. to Horse Mt.	7,300	17,200	(South of Cape	(South of Cape
South of Horse Mt.	87,200	126,000	Falcon)	Falcon)
Total	139,700	201,800	93,200	65,300

[1] Unless otherwise stated, data source is from Pacific Fishery Management Council, "Preseason Report III," 2006 Ocean Salmon Fisheries.

The following table shows the projected number of angler trips. Year 2006 is expected to have 294,400 trips, which is about a 13% decrease compared to the 338,500 trips in 2005 and a 27% decrease compared to the 404,600 trips within a five year (2001-2005) average.

Angler Trips

Management Area	*2006*	*2005*	*2001-2005 Ave.*
North of Cape Falcon	73,100	103,900	122,900
Cape Falcon to Humbug Mt.	50,200	50,200	83,300
Humbug Mt. to Horse Mt.	20,600	29,700	39,300
Horse Mt. to Pt. Arena	21,900	24,000	28,200
South of Pt. Arena	128,600	130,800	131,000
Total South of Cape Falcon	221,200	234,600	281,700
West Coast Total	294,400	338,500	404,600

The following table shows the projected ex-vessel revenue for 2006 in inflation adjusted 2005 dollars using method A for the non-tribal fishery. It can be observed that 2006 is projected to have a total revenue of $6,880,000 south of Cape Falcon. This is a 64% decrease from 2005 and a 59% decrease from the past five year (2001-2005) average.

Ex-vessel Value for Non-Indian Commercial Troll (A)

Management Area	*2006*	*2005*	*% Change from 2005*	*2001-2005 Ave.*	*% Change from 2001-2005*
North of Cape Falcon	$1,330,000	$1,686,000	-21%	$1,318,000	1%
Cape Falcon to Humbug Mt.	$1,524,000	$8,138,000	-81%	$7,195,000	-79%
Humbug Mt. to Horse Mt.	$0	$314,000	-100%	$353,000	-100%
Horse Mt. to Pt. Arena	$129,000	$1,464,000	-91%	$2,685,000	-95%
South of Pt. Arena	$5,227,000	$10,974,000	-52%	$8,381,000	-38%
Total South of Cape Falcon	$6,880,000	$20,890,000	-67%	$18,614,000	-63%
West Coast Total	$8,210,000	$22,576,000	-64%	$19,932,000	-59%

The following table shows the projected ex-vessel revenue for 2006 in inflation adjusted 2005 dollars using method B, which as mentioned previously, considered potential catch reductions due to the implementation of trip limits. It can be observed that 2006 is projected to have a total revenue of $5,759,000 south of Cape Falcon. This is a 69% decrease from 2005 and a 64% decrease from the past five year (2001-2005) average.

Ex-vessel Value for Non-Indian Commercial Troll (B)

Management Area	*2006*	*2005*	*% Change from 2005*	*2001-2005 Ave.*	*% Change from 2001-2005*
North of Cape Falcon	$1,330,000	$1,686,000	-21%	$1,318,000	1%
Cape Falcon to Humbug Mt.	$1,006,000	$8,138,000	-88%	$7,195,000	-88%
Humbug Mt. to Horse Mt.	$0	$314,000	-100%	$353,000	-100%
Horse Mt. to Pt. Arena	$143,000	$1,464,000	-90%	$2,685,000	-95%
South of Pt. Arena	$4,610,000	$10,974,000	-58%	$8,381,000	-45%
Total South of Cape Falcon	$5,759,000	$20,890,000	-72%	$18,614,000	-69%
West Coast Total	$7,089,000	$22,576,000	-69%	$19,932,000	-64%

The following table shows the commercial economic impacts in 2005 inflation adjusted dollars from the catch projection estimates using method A. The total economic impact south of Cape Falcon is projected to

be $11,903,000, which is a 67% decrease from 2005 and a 68% decrease compared to a six year (2000-2005) average.

Commercial Economic Impacts (A)

Management Area	*2006*	*2005*	*% Change from 2005*	*2000-2005 Ave.*	*% Change from 2000-2005*
North of Cape Falcon	$2,237,000	$3,013,000	-26%	$2,820,000	-21%
Cape Falcon to Humbug Mt.	$2,357,000	$11,246,000	-79%	$11,745,000	-80%
Humbug Mt. to Horse Mt.	$0	$1,627,000	-100%	$1,767,000	-100%
Horse Mt. to Pt. Arena	$240,000	$2,784,000	-91%	$6,103,000	-96%
South of Pt. Arena	$9,307,000	$19,968,000	-53%	$17,919,000	-48%
Total South of Cape Falcon	$11,903,000	$35,625,000	-67%	$37,533,000	-68%
West Coast Total	$14,140,000	$38,637,000	-63%	$40,353,000	-65%

The following table shows the commercial economic impacts in 2005 inflation adjusted dollars from the catch projection estimates using method B. A detailed explanation of these calculations can be found in section 2.0 of this document. The total economic impact south of Cape Falcon is projected to be $8,643,000, which is a 76% decrease from 2005 and a 77% decrease compared to a six year (2000-2005) average.

Commercial Economic Impacts (B)

Management Area	*2006*	*2005*	*% Change from 2005*	*2000-2005 Ave.*	*% Change from 2000-2005*
North of Cape Falcon	$2,231,000	$3,013,000	-26%	$2,820,000	-21%
Cape Falcon to Humbug Mt.	$1,385,000	$11,246,000	-88%	$11,744,000	-88%
Humbug Mt. to Horse Mt.	$140,000	$1,627,000	-91%	$1,767,000	-92%
Horse Mt. to Pt. Arena	$240,000	$2,784,000	-91%	$6,103,000	-96%
South of Pt. Arena	$6,879,000	$19,968,000	-66%	$17,919,000	-62%
Total South of Cape Falcon	$8,643,000	$35,624,000	-76%	$37,534,000	-77%
West Coast Total	$10,873,000	$38,637,000	-72%	$40,354,000	-73%

The following table shows the recreational economic impacts in 2005 inflation adjusted dollars from the catch projection estimates using method A. The west coast total economic impact is projected to be $27,243,000, which is a 12% decrease from 2005 and a 26% decrease compared to a five year (2001-2005) average.

Recreational Economic Impacts (A)

Management Area	*2006*	*2005*	*% Change from 2005*	*2001-2005 Ave.*	*% Change from 2001-2005*
North of Cape Falcon	$6,162,000	$8,753,000	-30%	$10,460,000	-41%
Cape Falcon to Humbug Mt.	$3,519,000	$3,519,000	0%	$5,976,000	-41%
Humbug Mt. to Horse Mt.	$1,418,000	$2,047,000	-31%	$2,711,000	-48%
Horse Mt. to Pt. Arena	$2,190,000	$2,403,000	-9%	$2,796,000	-22%
South of Pt. Arena	$13,955,000	$14,188,000	-2%	$14,759,000	-5%
Total South of Cape Falcon	$21,081,000	$22,157,000	-5%	$26,242,000	-20%
West Coast Total	$27,243,000	$30,910,000	-12%	$36,702,000	-26%

1.1 Tribal Information

The following table shows historical data of the Yurok and Hoopa Valley Reservation Indian Gillnet Chinook Harvest in numbers of fish relating to the commercial fishery. Tribes were not able to participate in the commercial fishery in 2005. In the Upper-Klamath, 554 fish were caught in 2004, and in the Mid-Klamath, 186 fish were caught in 2000, the most recent year they were able to prosecute a commercial fishery.

Tribal Information

Year or Average	*Commercial Estuary*	*Commercial Mid-Klamath*	*Commercial Upper-Klamath*
2000	4,104	186	813
2001	7,074	0	52
2002	8,959	0	0
2003	17,095	0	0
2004	14,264	0	554
2005	0	0	0
2000-2005 Average	8,583	0	237

For a more detailed evaluation of tribal impacts, please see the position paper provided by the Yurok Tribe (Appendix C) outlining their dependence on the Klamath River and its fisheries and identifying socioeconomic impacts.

2.0 Southwest Regional Office (SWR) Methodology for 2006 Catch & Revenue Projections

At the 2006 March Council meeting, the Salmon Technical Team (STT), which serves as an advisory body to the Council, was asked to evaluate the effectiveness of weekly landing limits as a management measure to reduce impacts in fisheries south of Cape Falcon on Klamath River Fall Chinook salmon. In response to this request, the STT considered several methods for modeling weekly landing limits. One of these methods, detailed in a report by the Oregon Department of Fish and Wildlife (ODFW) entitled "Effects of Weekly Landing Limits on the Oregon Troll Fishery" dated March 20, 2006, estimated the number of Chinook landed by each vessel per week for years 2002-2005 using historical fish-ticket data. The approximate percentage of vessel-weeks that would have been affected by weekly landing limits and the reduction in numbers of fish landed were then calculated. The STT, however, was concerned with assuming such reductions would occur in the 2006 fishery, as a number of assumptions are necessary. For instance, this method assumes that weekly landing limits do not affect the number or behavior of the boats that participate in the fishery. It also depends on the catch rates observed during 2003-2005 which are influenced by Chinook abundance and distribution. In other words, if this year's ocean abundance of key stocks, such as Central Valley fall Chinook, is substantially less than that observed in 2005 (and in fact the 2006 projection is 25 percent lower than the 2005 post-season estimate), the expected savings in 2006 could be considerably lower. However, the ODFW report also stated that the implementation of landing limits would likely discourage some boats from participating in the fishery and the expected savings could be greater than calculated. The California Department of Fish and Game (CDFG) developed a similar method, in which the estimated catch by each vessel during any week in the absence of landing restrictions was computed from landings data for 2003-2005. If the observed catch for a vessel in a week exceeded the weekly landing limit, then the difference could be interpreted as a savings. In addition to the assumptions mentioned previously, the STT also expressed other concerns including:

1) Inability to predict effort response to landing limit restrictions – Neither method addresses the need to forecast effort response. To avoid effort transfer between ports, landing limits would have to be applied uniformly to all ports.
2) Changes in fleet structure – The historical data from which the relationship between days open and days fished was collected in the absence of weekly landing limits. Such limits would not affect all boats uniformly, so the fleet structure would be expected to change, but how is unknown.
3) Latent effort – Landing limits could affect the market price of fish. There is a large number of boats that fish very little or not at all. If the price of fish were to increase in response to limitation of supply due to landing limits, there could be a substantial increase in the number of boats participating in the fishery or the number of days fished by these boats relative to the 2003 through 2005 open seasons.
4) Monitoring and Enforcement - Weekly catch limits will tend to encourage unreported landings and increase the difficulty of monitoring and enforcement. With limited catch, and more time in port, there would be less incentive for fishermen to deliver their catches to buyers, and greater incentive for direct retail sales. This could make it harder to collect reliable CWT recovery data essential for Council management.

Because of the STT's concerns with these and other methods proposed, the Council did not attempt to quantify anticipated reductions in catch and economic impacts associated with these vessel limits. The Council does note in Preseason Report III, however, that "these limits will have a downward influence on personal income". Although the concerns expressed by the STT are valid, the vessel limits implemented are expected to have a discernible impact on the 2006 season. Therefore, NMFS determined that the ODFW and CDFG analyses, when presented in conjunction with the Council's projections, were reasonable

methods for projecting catch reductions, and used their results to provide a rough approximation of the economic impacts.

The SWR restricted its evaluation to use of the 2005 data sets and analyses provided by CDFG and ODFW since the 2005 season structure was most similar to that of the 2006 season, although the ocean abundance in 2006 is expected to be 25% lower than it was in 2005, as previously mentioned. An updated version of the ODFW document (April 21, 2006) "Effects of Weekly Landing Limits on the Oregon Troll Fishery" provides estimates of the reduction in catch expected in years 2003-2005 by month, if 50 and 75 Chinook per vessel per week landing limits had been implemented in those years[2]. The CDFG analysis also provides such estimates for years 2003-2005 by month and port area, if 50 and 100 Chinook per vessel per week landing limits had been implemented in those years. In this case, the reductions expected under the 50 and 100 fish limits were averaged to approximate the reduction expected under a 75 fish limit.

The average weight of a Chinook fish for Oregon was obtained by using an average of the past five years (2001-2005) for the Oregon Chinook season by month. The same method was used for California, but instead of using a State average, averages were calculated for each port area by month.

The average ex-vessel price for the 2005 season by month for Oregon and California was used to estimate revenue. Year 2005 ex-vessel value was used as opposed to a past five year average, etc., since year 2005 was a more restricted season compared to recent years and therefore is more applicable to the further restricted 2006 season.

Note that because of the 75 and 50 Chinook limit per vessel per week implemented within some management areas, it is likely that fishermen will discard smaller fish in order to obtain the maximum poundage of fish possible with the limit restrictions. The SWR method, to project catch does not take this high-grading issue into account and therefore, total fishery impacts may be underestimated.

The SWR economic impact projections were made using the SWR catch projections, along with data and methods provided by the Council. Note that when calculating economic impacts, the Council considers “out of area landings,” which is when fish are caught in one management area, but landed in another. In simple terms, a variety of percentages are appropriated to the catch projections in each management area in order to capture the contributions from “out of area landings.” The SWR uses the catch projection provided by the Council for North of Cape Falcon due to limited monthly data. Since the “out of area landings” component is considered, there is a combination of catch projections (A for North of Cape Falcon and B for all other management areas) used to predict economic impacts.

The following is a table showing the SWR (B) calculations described above for catch and revenue projections.

[2] It should be noted that the ODFW report expressed concern with determining catch reduction by area or month due to “noise” that would be added by existing regulations.

		Pre-III 2006 Projected Catch (A)	Assumed Reduction in Catch Under Limits	Reduction in Catch	SWR 2006 Projected Catch	2001-2005 ave. Chinook weight (pounds)	SWR 2006 Projected Catch (pounds)	2005 ave. Ex-vessel price/pound	SWR 2006 Projected Revenue
	Cape Falcon to Florence South Jetty (Newport)								
June	16 days within 4 weeks (75 chinook limit/vessel/week)	14,525	29.0%	4,212	10,313	10.80	111,378	3.35	$373,115
July	9 days within 3 weeks (75 chinook limit/vessel/week)	6,455	7.0%	452	6,003	11.14	66,875	3.11	$207,982
August	3 days within 1 week (75 chinook limit/vessel/week)	2,775	8.0%	222	2,553	11.04	28,185	3.92	$110,486
September	14 days within 2 weeks(50 Chinook limit/vessel/week)	14,628	61.0%	8,923	5,705	10.68	60,929	2.36	$143,791
October	15 days within 3 weeks(50 Chinook limit/vessel/week)	6,740	37.0%	2,494	4,246	11.08	47,048	3.62	$170,313
	Horse Mt. to Point Arena (Fort Bragg)								
September	15 days or quota of 4,000 (30 chinook limit/vessel/day)	4,000	0.0%	0	4,000	12.96	51,840	2.76	$143,078
	Pt. Arena to Pigeon Pt. (San Francisco)								
July	6 days within 2 weeks (75 Chinook limit/vessel/week)	12,100	55.5%	6,716	5,385	12.50	67,306	2.37	$159,516
August	31 days within 5 weeks (75 Chinook limit/vessel/week)	23,800	20.0%	4,760	19,040	14.02	266,941	4.10	$1,094,457
September	30 days or quota of 20,000	20,000	0.0%	0	20,000	14.28	285,600	2.76	$788,256
	Pt. Reyes to Pt. San Pedro (Fall Area Target Zone)								
October	10 days	1,300	0.0%	0	1,300	14.18	18,434	4.31	$79,451
	Pigeon Pt. to Pt. Sur (Monterey)								
May	31 days within 5 weeks (75 Chinook limit/vessel/week)	62,200	37.0%	23,014	39,186	12.08	473,367	3.76	$1,779,859
July	6 days within 2 weeks (75 Chinook limit/vessel/week)	4,400	40.5%	1,782	2,618	13.66	35,762	2.37	$84,756
August	31 days within 5 weeks (75 Chinook limit/vessel/week)	2,000	6.5%	130	1,870	13.98	26,143	4.10	$107,185
September	30 days	500	0.0%	0	500	13.72	6,860	2.76	$18,934
Total South of Cape Falcon to Pt. Sur									**$5,261,179**
	Pt. Sur to U.S./Mexico Border (Monterey)								
May	Open May 1 through Sept. 30 (no restrictions)	5,900	0.0%	0	5,900	12.08	71,272	3.76	$267,983
June		3,600	0.0%	0	3,600	13.08	47,088	4.04	$190,236
July		400	0.0%	0	400	13.66	5,464	2.37	$12,950
August		400	0.0%	0	400	13.98	5,592	4.10	$22,927
September		100	0.0%	0	100	13.72	1,372	2.76	$3,787
Total South of Cape Falcon to U.S./Mexico Border		**185,823**			**133,119**				**$5,759,061**